The Wilderness Incident Investigative Interview:
Mitigating Memory Challenges Utilizing the Enhanced Cognitive Interview (ECI) Technique

By
Kris Wright
Operations Director, Conservation Crews
The Student Conservation Association, Inc.

Kurt A. Merrill
National Director of Risk Management
National Director, Conservation Crews
The Student Conservation Association, Inc.

Interviewing participants and witnesses is the most critical component to the Wilderness Incident Review Process (Merrill & Wright, 2001). When successful, interviews provide the highest quality and quantity of information to developing case studies. Memory retrieval is not an easy task; there are many factors that collude to hinder the process. For years the outdoor and adventure industry has approached interviews with its best thinking, based in respect for the interviewee and modeled after field facilitation and good listening practices. This intelligent yet while informal interview approach has yielded helpful results in the past. But recent research in the criminal investigation field has shown that using specific interview strategies can produce better results than questioning and good listening alone. The outdoor and adventure industry would greatly benefit from employing the ECI technique during the information gathering stage, or stage three, of the internal incident review process (Merrill & Wright, 2001).

Milne and Bull's (2000) *Investigative Interviewing: Psychology and Practice* describes several interview strategies that have been proven to produce more accurate and greater quantities of information from witnesses. The Enhanced Cognitive Interview (ECI) technique, one strategy explained in Milne and Bull, particularly compliments our industry's approach to managing human dynamics. This strategy empowers the interviewee while the investigator facilitates maximum memory retrieval. With only slight adaptation, the ECI technique can be tailored to fit the outdoor and adventure industry's particular investigative needs.

To better understand the ECI's usefulness, this paper will discuss the challenges to memory. It will then explain how to employ the ECI technique as well as discuss various questioning styles. The writers will examine each section in relation to a case study, citing specific examples from an incident that occurred on an SCA Conservation Crew in the summer of 2000.

Propane Ignition Incident: A Case Study

A Student Conservation Association (SCA) group of two leaders and six students were camped at the White River Campground at Mount Rainier National Park for their two week trail building project. It was Tuesday evening and the SCA work crew was preparing dessert on one of two Coleman two-burner propane stoves (stove #1). The stoves, each with a five-gallon propane tank connected by an extension hose, were about five feet from each other under a dining tarp. At some point in the evening Michael and Amy, the crew leaders, instructed a participant to turn off the tank of stove #2. Later Amy approached stove #2 to clean and dismantle it, first making sure the knob on the tank would not turn any further in the off direction. Then as she started to unscrew the hose from the tank, it began to hiss and discharge propane at a rapid rate. She tried to screw the hose back on but was unsuccessful. Michael stepped in and his attempts to turn off the valve and screw the hose back on also failed. During his attempt the hose came completely off the tank began discharging at its highest rate. As noted by Michael, "It was loud, stinky, very cold, and you could see the vapor shooting out of the tank [making the air] thick and hazy." One of the participants saw this and yelled, "Get out of here," at which point everyone ran away from the dining area, including Michael and Amy.

At that moment the disguised flame still cooking dessert on stove #1 ignited the gas. The ensuing fireball engulfed Michael, burning his hand, face and singeing his hair. The ignition melted a large hole through the crotch of his fleece pants. The blast also melted the back of Amy's fleece and singed her hair. The explosion tipped the tank and caused a 20 foot flame to shoot upward, incinerating the dining tarp and starting a small duff fire. A neighboring camper used his fire extinguisher to put out the duff fire and knock the flame off the tank.

After the explosion, Michael and Amy gathered their participants in a nearby campsite. They radioed the Park Service and activated SCA's Emergency Response System. Michael was transported to a medical facility and diagnosed with first and second-degree burns to his right hand, ear, cheek, and nose. He was treated and released. Amy and the participants suffered no physical injuries requiring professional medical care.

Within 24 hours, SCA staff traveled to Mount Rainier National Park to provide support and gather initial information from the crew leaders and bystanders. During this initial interview process, it became clear to staff that even within 24 hours of the incident, witnesses were challenged to recall accurate information. The Enhanced Cognitive Interview (ECI) technique can be used to help over come these challenges.

The Challenges in Memory Encoding, Storage, and Retrieval

Researchers define three stages of memory creation: encoding, storage and retrieval (see Table 1). Stage one, the encoding, happens as an incident is occurring. The brain filters through the multitude of information presented to the witness and self-selects the important pieces. These bits of information are then encoded and stored in the brain. When drawn upon, these pieces of information can be retrieved (Milne & Bull, 2000). In essence, encoding is like taking photographs, which are then stored and retrieved to construct a memory of an event. To illustrate with our propane incident, small pieces or snapshots of what witnesses saw, smelled, tasted and felt were encoded and subsequently stored in their brains. Then as the witness "remembers" the incident her brain attempts to retrieve these photos to recreate the event.

Challenges during Encoding
It is critical to understand that there are challenges at all three stages of memory creation. An investigator must be acutely aware of these challenges to successfully guide the interviewee's memory reclamation process. The primary challenge during the encoding stage is capturing all the pertinent information during the initial intake. As stated above, memories are encoded as photos and therefore information between shots is missed (Milne & Bull, 2000). Because each person determines which snapshots to take, each individual's encoded information can be different for same incident. This complexity is only exacerbated by the fact that some people are more sensitive to their surroundings (Aron, 1998), and therefore can perceive and encode varying levels of information. So not only does each

individual take different snapshots of the same event, but they also take a different overall number of snapshots.

While capturing pertinent information is challenging in everyday memory encoding, incident specific factors also negatively influence the brain's ability to encode information. These factors include setting challenges such as lighting, the distance the witness stood from the event, and environmental or human distractions. The witness' state of mind during the event also plays a large part in what information is encoded. Traumatic incidents and the witness' stress level impact information encoding. The witness' involvement in the situation can also impact the encoding process. Leaders in the outdoor and adventure industry fall prey to this during traumatic events that occur during their watch. For example, a leader's memory encoding may be impacted by the traumatic incident that occurred, her own stress, and her feelings of guilt or perception of responsibility for the incident. All of these factors negatively impact one's ability to encode information at the time of the incident.

Challenges during Storage
Sometimes witnesses have difficulty finding encoded information. Information is stored in the brain not unlike how files are stored on a computer hard-drive. If memories are stored in folders, you must know the correct file folder to retrieve them. Occasionally when a person searches her brain for an encoded memory, the brain has stored the snapshot in a different location (Milne & Bull, 2000). A classic example of this phenomenon is when you can't remember someone's name and it feels like it's on the tip of your tongue. Well-asked questions can help witnesses find the correct file where memories are stored, as explained in further detail below.

Challenges during Retrieval: The Interviewee
The problems surrounding memory retrieval are two-fold because both the interviewee and the investigator are challenged in the retrieval process. The interviewee's memory recall can be stunted by various distractions, including the usage of a process called scripting, as well as other interfering emotional factors.

All humans have scripted memories; scripts tell us how things are supposed to happen and thereby allow us to accomplish basic thought processes more quickly. For example, all of us have a script that tells us how to eat using a fork; we do not think about how to do this every time we take a bite. Most Americans, however, do not have a script for how to use chopsticks but rather have to actively recall memories about how to hold, maneuver,

and eat with them. Scripts are useful in that they enable us to function well in the world around us. But scripts can also be disruptive to the memory reclamation process. Because the brain encodes memories like a camera and not a camcorder, there are many gaps in information when a person recalls a memory. To make the event run more like a movie than a photo album, our brain uses scripts to fill in gaps in encoded memory.

An SCA investigator encountered the following script while interviewing a bystander about the propane incident. The bystander stated that "Amy tried to turn the stove off . . . and then Michael stepped in and tried to turn off the stove." He made a gesture that simulated turning the stove knob off. Realizing that the bystander's gesture was different from what other witnesses described (the turning of a stove knob versus turning a tank valve), the investigator halted the interview. After placing the witness back in time and asking him to again report the incident smells, taste, etc, it was discovered that the witness was over a quarter mile away at the time of the incident. Instead of remembering, he was recounting third-hand information and playing a script of what he thought Amy would look like turning the stove off, actually mimicking the accompanying hand motion.

Emotions can also be barriers to retrieving memories by interrupting an interviewee's ability to think clearly and therefore recall memories (Jackins, 1982). A Critical Incident Stress Debriefing (CISD) can help relieve a witness of her feelings, which would in turn allow for more memory recall. However, a CISD should not be done at the same time as the informational interview this paper is addressing, but rather as part of the initial assessment and support of a participant/witness. Once this debriefing occurs, she will be able to think more clearly and be able to access and retrieve her stored memories.

Challenges during Retrieval: The Investigator
Investigators are challenged by similar factors. The investigator combats any assumptions, hypotheses, or stereotypes she brings into the interview. She is also challenged to leave behind her own scripts and emotions about the incident. These factors can influence the quality and quantity of information the interviewee is able to retrieve by influencing the investigator's behavior. It is important for investigators to be aware of these issues and try to mitigate their influences before stepping into the interview.

Investigators also need to carefully manage the information they are collecting. They encode, store and retrieve information both during and after the interview. Specific research has shown that even if an interview is documented directly after the interview, only two-thirds of the information disseminated by the witness will be present in the written report (Kohnken, Thurer, & Zoberbier, 1994). Interview professionals in other fields have found that tape recording interviews greatly increases the accuracy of documentation.

It must also be recognized that an investigator holds tremendous power over the interview itself. Her decisions about the setting, tone, questioning style, and interview strategy will help determine the overall success of the interview. Research has shown that there are certain questioning styles which aid in memory retrieval, and others that not only hinder memory retrieval, but aid in scripting and false information gathering (Milne & Bull, 2000). These poor styles include leading and misleading questions, forced-choice questions, and multiple questions.

Inappropriate Questioning Styles
Leading and misleading questions can confuse your witness and produce incorrect information. A question has been defined as leading/misleading if information in the question has not been mentioned previously by the witness; it assumes or suggests an answer. For example, "Who turned the stove off?" would be a leading/misleading question if the witness up to this point in the interview had not mentioned turning the stove off. It suggests that the stove was turned off. Asking a misleading question encourages the interviewee to give false information. In a truly investigative situation, an investigator doesn't know if the question she is asking is leading or misleading, so it is best to avoid mentioning any new information and steer clear of this questioning style completely.

Forced choice questions give the interviewee choices instead of an open-ended question. "Which crew leader turned off the stove" is a forced question, the available answers being "Amy" or "Michael". This style of questioning does not allow for a third option, such as seeing a student turn off the tank, which may be the correct option. Leading/misleading questioning and forced choice questioning styles tend to be used when the investigator has a presupposed hypothesis about what occurred; the investigator employs these questions to either prove or disprove her hypothesis. As an investigator, be sure to examine your assumptions before entering an interview and proceed with an open mind.

Asking multiple questions in rapid succession is also an inappropriate questioning technique. An example of this

would be "Did she try to turn the knob clockwise or counter clockwise? Was it frozen? Was the valve turned off? Did she turn the valve clockwise or counter clockwise?" Asking a series of questions may confuse or hurry a witness. It confuses her around which question should be answered first and in what order. The witness may struggle to retrieve the encoded and stored information and thus not have enough time to access enough of the stored information. Using this method, one or more questions will most likely be lost and the information incomplete.

The Enhanced Cognitive Interview Strategy

The purpose of conducting an information interview after an incident is to retrieve accurate, complete

information. An ideal interview strategy would contradict the challenges to complete retrieval. It would help dissipate memory-blocking emotions and aid in discerning encoded information from scripts. It would assist the brain to search out information stored and not readily accessible.   In short, the perfect interview strategy would completely seek out all stored information, thereby retrieving the maximum information possible. This interaction is displayed in Table 1 below, one oval representing the stored information and the other the interview strategy. The shaded area in which they successfully overlap represents the retrieved information. The purpose of any interview strategy is to increase this overlap, thereby retrieving the maximum amount of information.
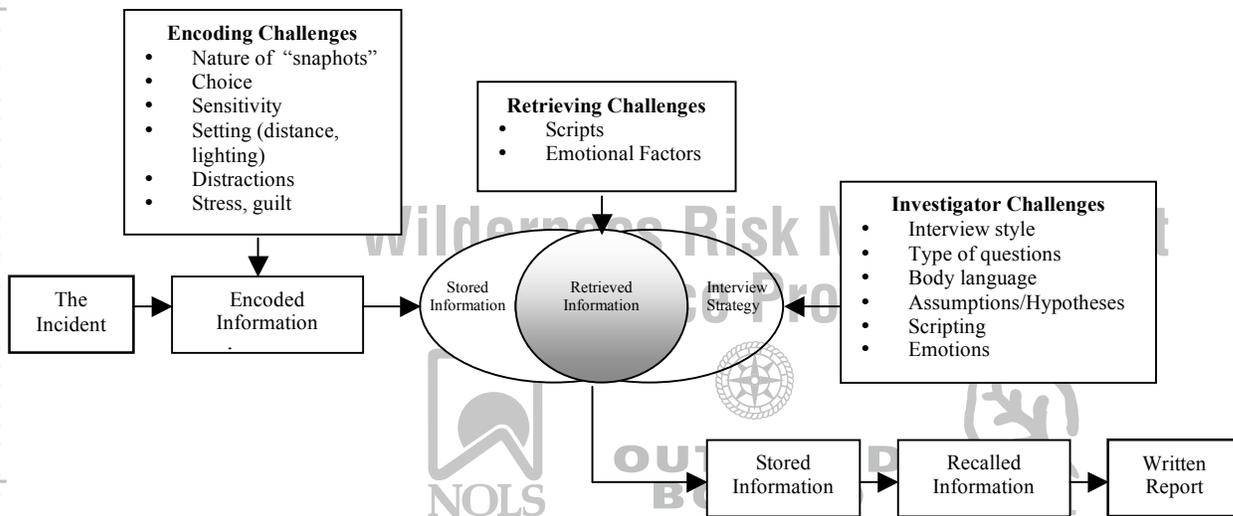

Table 1: Incident Memory and Interview Process (adapted from Milne & Bull, 2000)

The Enhanced Cognitive Interview (ECI), developed by cognitive psychologists Fischer and Geiselman (1992), has proven one of the most effective techniques in retrieving maximum information, as outlined in Milne and Bull's *Investigative Interviewing: Psychology and Practice* (2000). This technique is best applicable with interviewees who are acting in good faith to recall memories.   An interviewee-driven process, the ECI method compliments our industry's humanistic approach and leadership practices. In fact, because of the similarity between our facilitation ethics and ECI values, many of our industry's investigators already employ key ECI strategies. However, the complete ECI increases the depth and exploration of an interview, increasing our opportunity to further unravel incidents and develop case

studies. There are seven phases to an ECI; below each phase is explained in depth, describing techniques needed to perform each phase successfully.

Phase one: Greet and personalize the interview
To get the best results from an interview, an interviewee must feel at ease, confident, and secure.   Being interviewed is a nerve-wracking exercise for even the most composed individual. When a person is anxious and nervous, they may show their emotional discomfort by laughing, yawning, sweating, shaking, or crying (Jackins, 2000).   Feelings will hinder the information retrieval process so allow them to work through their feelings, releasing these physical manifestations, during the greeting phase.   Help the interviewee feel more

comfortable by connecting with her and establishing a good rapport. Be concerned about her comfort and be sure the interview space is quiet and without distractions. Break the ice by asking some light initial questions, such discussing the past weekend or perhaps a news event. Show that you will be a delighted listener throughout the interview, listening with interest.

Structure of the Enhanced Cognitive Interview

Phase 1	**Greet and personalize the interview** **Establish rapport**		**Phase 4**	**Questioning**
				• Questions from free report
				• Concentrate
Phase 2	**Explain the aims of the interview**			• Report everything
	• Report everything			• No fabrication or guessing
	• Transfer control			• OK to say "Don't know"
	• No fabrication or guessing			• OK to say "Don't understand"
				• Activate and probe an image
				• Open and closed questions
Phase 3	**Initiate a free report**		**Phase 5**	**Varied and extensive retrieval**
	• Context reinstatement			• Change the temporal order
	• Open-ended questions			• Change perspectives
	• Allow for pauses			• Focus on all senses
	• Don't interrupt		**Phase 6**	**Summary**
	• Non-verbal behavior		**Phase 7**	**Closure**

Table 2: Structure of the enhanced cognitive interview (Milne & Bull, 2000, p. 40)

Phase two: Explain the Aims of the Interview
It is important that the interviewee knows what is expected of her during the interview. This will help her to feel more comfortable and confident, which will aid in the information retrieval process. She probably expects that you, the investigator, will control the interview. In an ECI though, the investigator plays the role of facilitator and the interviewee controls the process. As outdoor professionals we are familiar with this mode of communication, but it is important to remind the interviewee of this before the interview starts.

Be sure to frame what you want from the interviewee during the interview. First, explain that memory retrieval takes focused energy and intense concentration. Second, explain that it is not easy task. Third, let her know that you want to know every detail regardless how she views its importance. Studies have shown that unless the investigator explicitly states this, a witness will edit the information according to what she thinks the investigator views as important, omitting potentially useful details (Fisher & Chandler, 1991). Fourth, encourage her to share all the information she remembers, even if she is not confident in its accuracy. Studies have also shown that interviewees tend to edit out the information that they are not confident in (Noon & Hollin, 1987). In addition, research indicates that there is no corollary relationship between the interviewee's confidence in the information and its accuracy (Kebbell, Wagstaff, & Covey, 1996; Perfect, Watson, & Wagstaff, 1993). Be explicit that you want every conceivable detail regardless of the interviewee's confidence level or how she weighs its importance. As mentioned above, tape recording your interview will increase the accuracy of the documented information so explain its use and ask the interviewee's permission to use it during the interview.

Phase Three: Initiate Free Recall of Event
During phase three the interviewee is encouraged to recall the event at her own pace, in her own words. The phase begins with the investigator initiating a context reinstatement, helping the interviewee go back to the place or context where the incident occurred. Some believe that returning to the context in which the information was encoded helps the recall process (Milne & Bull, 2000). During a context reinstatement the investigator should ask a series of open-ended questions. Open-ended questioning is arguably the most fruitful questioning style, empowering the interviewee by allowing her an unrestricted response and giving her control of the flow of information. An example of an open-ended question is "Tell me what happened" or "What did you see/smell/hear?"

To initiate a context reinstatement, the investigator would attempt to take the interviewee back to the scene by slowly asking open-ended questions meant to stimulate her stored memories. A context reinstatement for the propane incident case study may be,

> "Take yourself back to the incident. Get a picture in your mind. Where were you? What did you see? How did you feel? What did you smell? What did you hear? When you're ready I want to hear the whole story, at your pace, from the beginning. I want to hear all the details, even if they seem unimportant or you're not completely sure. Take your time."

After the context reinstatement, the investigator's task is to be a delighted and active listener, modeling attentive body language and taking brief notes. Each interviewee will have her own pace of recollection and speech, and it is important to allow the recall to proceed at her speed. The investigator should not interrupt or fill in blanks or pauses, even if the investigator thinks of questions or needs clarification. This will only cause the interviewee to feel hurried and to think the investigator questions her ability or the integrity of the information. Save all questions and clarifications for phase four.

Phase Four: Questioning

After the free recall of events, the investigator may have a list of questions concerning missing or unclear information. Phase four consists of asking those questions of clarification. But as with all phases of an ECI, it is important to explain this phase to the interviewee before proceeding. Refocus the interviewee to concentrate on the task at hand. Let her know that you will be asking questions based upon the information she just told you. Again reinforce that all details matter, and let her know that it is ok to say "I don't know" to any question she doesn't know the answer to. Also encourage her to tell you if she doesn't understand the question. Encourage her to share all the information she knows, but not to speculate or guess about anything that is unclear.

As before, it is important to choose appropriate questioning techniques, including both open and closed questions. In this stage you can ask narrower open-ended questions, such as "You stated that you tried to turn the valve off. Can you tell me more about what that was like?" Closed questions, questions that have a limited range of responses, are second best to open-ended questions. They have their value, but only after open-ended questions have failed to provide you with the information you are gearing for. For example, if the

interviewee neglects to give you a complete picture after asking the above open-ended question, you can follow with a closed question such as "Did you notice which direction you turned the valve?" The danger of closed questions is the potential for the interviewee to perceive an underlying message. She may think that you only want information pertaining to that one question and thereby cut off valuable insight and elaboration. Closed questioning should therefore be used judiciously.

During the questioning phase it is helpful to utilize mental imagery in conjuring a specific time or place. Employ open and closed questions to probe the incident. Similar to the free recall, you would start with an open-ended question and follow up with closed-ended questions. Again, be sure to evoke all five senses, as smell or taste might trigger recovery of more information. Avoid using leading questions. For example,

> "I want you to visualize, in your mind's eye, what was happening five minutes before the propane ignited. What did you see? Smell? Feel? Where was the group in relation to you? What were they doing? When you have a good picture in your mind, tell me everything you can in as much detail as you can."

The investigator's ability to organize and ask their questions in a logical sequence also impacts the quantity and quality of information the interviewee retrieves. As an investigator, it is important to be organized and deliberate in your questioning. Ask all your questions about one subject before moving on to the next item. If the interviewee has to jump back and forth from image to image, valuable information may be lost (Milne & Bull, 2000).

Phase Five: Extensive retrieval

It is important that an interviewee is repetitively encouraged to retrieve more information. Most investigators and interviewees are tempted to stop after phase four, but the ECI technique recommends further strategies to obtain more information. The investigator must clearly explain to the interviewee, though, that the questioning continues because the techniques have been proven to provide more information, not because the interviewee's testimony is perceived as faulty.

Two techniques proven to provide more information are Switching the Temporal Order and Changing Perspective. Using the temporal order technique, an investigator would instruct the interviewee to recall the incident backwards. This sounds confusing to most

interviewees so it is important to take it one step at a time, prompting the interviewee gently with questions. Questioning may take the form of, "What is the last thing you remember? What happened before that? What happened before that?" Changing the order of events helps the interviewee find the actual memory record, delineating encoded information from script (Milne & Bull, 2000).

Changing perspective is another helpful strategy in recovering additional information. This technique encourages the interviewee to view the incident from another person's viewpoint. Be clear that she must report facts that she has witnessed herself. The purpose is not to fabricate or guess, but rather to see the event from the eyes of another. This technique has proven successful in uncovering information not located during the free recall; in essence it may help to locate encoded information stored in a different mental folder.

Phase Six and Seven: Summary and Closure
As with most processes in our industry, summary and closure are important pieces to the ECI. Before closure, the investigator should briefly summarize the information the interviewee has provided. Encourage her to add or question anything that does not sound correct. Then provide closure to the interview, reestablishing your personal connection with the interviewee. Always end the interview on a positive note, so be sure to spend the time helping her mentally relocate to present time. Also be sure to thank her for her time and effort.

Summary

For purposes of closure, readers may be wondering what conclusions were drawn upon the completion of the propane incident investigation. After thorough investigation and multiple interviews of witnesses, SCA staff were able to uncover the series of events that led up to the propane explosion. Staff determined that both stoves were in working order and at the time of the incident a burner on stove one was lit. Second, staff determined that Amy's assessment of the tank valve was incorrect. When she tried to turn the valve in the 'off' direction and it didn't move, she assumed that it was closed. Actually, it was stuck in the 'on' position. The primary mistake, however, was that she began to dismantle the hose from the tank before checking if there was an open flame in the area. Because the tarp above was collecting the vented gas, the conditions were conducive for the flame from stove one to ignite the propane, causing the unfortunate explosion.

In the investigation of this incident the investigators were intrigued by the challenges our staff, crew members and witnesses faced in their memory recollection. They encountered stress-altered encoding and scripting, both of which impacted information gathering. The Enhanced Cognitive Interview (ECI) can be used to mitigate these challenges. This technique, fundamentally similar to our industry's approach to human dynamics, provides a construct though which our industry's professionals can more accurately and completely reconstruct incidents and build our industry's collective risk management knowledge.

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About the Authors

Kris Wright

Kris is the Operations Director of SCA's Conservation Crew Program and is a member of SCA's Risk Management Team. She has been involved in leadership, outdoor adventure, and education work for over fourteen years and holds a B.A. from the University of Puget Sound. Kris served as a Peace Corps Volunteer in Turkmenistan, CIS, is currently a trained NOVA Community Crisis Responder, and is a Re-Evaluation Counselor in Seattle, WA. Kris may be reached at kwright@thesca.org.

Kurt A. Merrill

Kurt is the National Director of Risk Management and the National Director of Conservation Crews at the Student Conservation Association, Inc. (SCA) in Charlestown, NH. He has been an outdoor educator and administrator for over fifteen years and holds a B.S. in Recreation and Parks Management and a M.S. in Leisure Studies from The Pennsylvania State University. Kurt currently serves as the Chair for the Wilderness Risk Managers Committee and may be reached at kmerrill@thesca.org.

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